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A bit of background...

- *Major goal at ICT:*
Create compelling VR environments for training
 - High quality graphics
 - Immersive sound
 - Strong storyline
 - Virtual humans

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AI Virtual Humans

- Behaviors not pre-scripted
 - Behave by understanding situation and reasoning about possibilities
- Communicate in natural language
- Can explain actions & coach
- Respond emotionally to situation

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Looking back....

- Early attempts failed to create unified intelligent systems exhibiting a broad variety of behaviors

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What's different now?

- Faster, more powerful (& cheaper) hardware
- Some of the hard problems have working solutions
 - e.g. speech recognition
- Better software environments support modular architectures
 - Don't have to build it all yourself
- Hybrid approach: synergy through mixing techniques
 - Symbolic, probabilistic, neural nets, etc

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What's different now? (cont'd)

- Model based programming

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Example: Model Based Programming for Task Oriented Domain

Model	Task2	Task3	Task4
Task1	Preconditions:	Preconditions:	Preconditions:
Effects:	Effects:	Effects:	Effects:

↓

Reasoner

↓

Task3 → Task4 → Task1

- Robust to changes in world state
- Model easier to modify
- Model explainable
- Model can be used to understand other's actions

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Mission Rehearsal Exercise Project

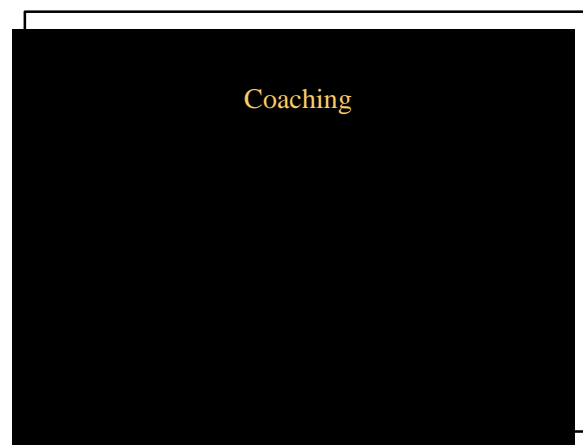
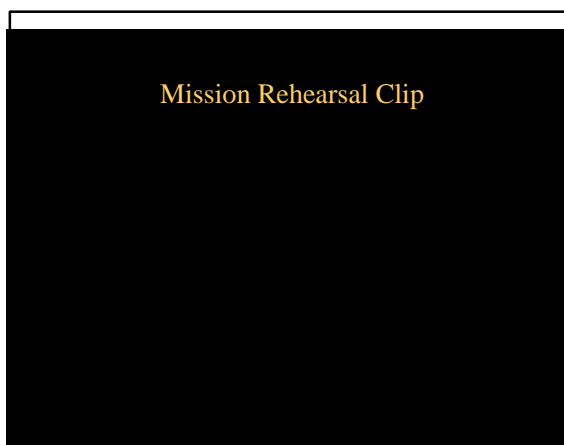
- Virtual Reality Environment
 - Immersive Audio and Graphics
 - Virtual Humans with reasoning and emotion
 - Locals
 - Friendly and hostile elements
 - Coach
 - Dilemmas and decisions

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ICT Virtual Reality Theater

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Missing Emotions



Adding Emotions



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Summary

- Using AI we're beginning to create characters that have much richer behaviors and depth
- Opens up possibility for new kinds of games

